

## CLAIMS

1. A catalyst for acrylonitrile synthesis comprising a particle containing silica and a composite oxide including at least molybdenum wherein the Mo/Si atomic ratio in bulk composition of the catalyst, expressed as A, and the Mo/Si atomic ratio in surface composition of the catalyst particles, expressed as B, have a relationship such that B/A is not greater than 0.6.

2. A catalyst for acrylonitrile synthesis according to claim 1, wherein aforesaid bulk composition of the catalyst is expressed by the following general formula 1:



wherein, Sb, Mo, O each represents antimony, molybdenum and oxygen; C represents at least one element selected from the group consisting of iron, cobalt, nickel, manganese, uranium, cerium, tin and copper; D represents at least one element selected from the group consisting of vanadium and tungsten; E represents at least one element selected from the group consisting of magnesium, calcium, strontium, barium, lanthanum, titanium, zirconium, niobium, tantalum, chromium, rhenium, ruthenium, osmium, rhodium, iridium, palladium, platinum, silver, zinc, cadmium, boron, aluminum, gallium, indium, sodium, potassium, rubidium, cesium, thallium, germanium, lead, phosphorus, arsenic, bismuth, selenium and tellurium;  $\text{SiO}_2$  represents silica; subscripts a, b, c, d, e, f and g each represents an atomic ratio of each element; when a is 10, b is in a range of 0.1 to 15, c is in a range of 1 to 20, d is in a range of 0 to 10, e is in a range of 0 to 20, g is in a range of 10 to 200 and f represents the atomic ratio of oxygen that fulfills the requirement of the valence of each element above.

3. A catalyst for acrylonitrile synthesis according to claim 1, wherein aforesaid bulk composition of the catalyst is expressed by the following general formula 2:



wherein, Mo, Bi, Fe and O each represents molybdenum, bismuth, iron and oxygen; F  
 5 represents at least one element selected from the group consisting of sodium, potassium, rubidium, cesium and thallium; G represents at least one element selected from the group consisting of cobalt, nickel, copper, zinc, magnesium, calcium, strontium, barium, titanium, vanadium, chromium, manganese, tungsten, silver, aluminum, phosphorus, boron, tin, lead, gallium, germanium, arsenic, antimony, niobium, tantalum, zirconium,  
 10 indium, sulfur, selenium, tellurium, lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, terbium, holmium, erbium, thulium and ytterbium; SiO<sub>2</sub> represents silica; subscripts h, i, j, k, l, m and n each represents an atomic ratio of each element; when h is 12, i is in a range of 0.1 to 5, j is in a range of 0.1 to 10, k is in a range of 0.01 to 3, l is in a range of 0 to 20, n is in a range of 10 to 200 and m represents  
 15 the atomic ratio of oxygen that fulfills the requirement of the valence of each element above.